RanaSystems

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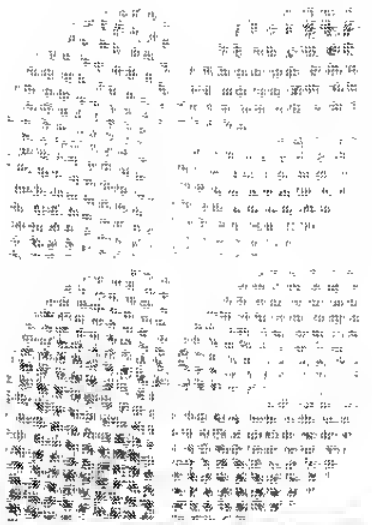
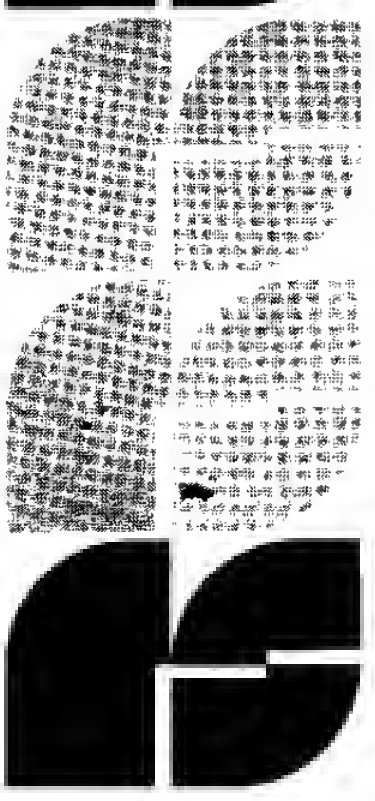


RanaSystems

1000



Installation Guide

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William R. Howey, Editor

The five electronic function pads on the front give you messages on the two digit LED readout telling you what track the drive is on, the density selected, the unit identiflcatlon, and status or error codes, just to nams a few.

Your new **RANA** 1000 also has a write protsct switch to protect your valuable information from being erased, and you can now format a blenk diskette even if your computer is doing something else!

All these things bring your **ATARI** computer to a much higher level of sophistication without making things more complicated. In other words anyone can benefit from the advantages of uslng The **RANA** 1000. School reports, learning Foreign lengueges, following the stock market, financial modsling, writing programs or just pleying games become more enjoyable with this fine tool.

We thank you for your intelligent decision.

Sincerely,

The People From **RANA**

OUR COMPANY. (US!)

Rena Systems, like ell companies, started small. Just two years ago a man with a vision towards excellence began to bring together the finest team of design and production sngineers, financial experts, and marketing professionals available in the computer Industry.

These individuals had long ago proven superiority in their chosen field end their combined knowledge, talent and expertise repreaent over two and a half centuries of accomplishment.

Because of the overwhelming response of the buslness, professional, and hobbyist community, and the need for quallty disk drives, **RANA** is now the largest manufacturer of plug compatible drives in the world.

Our Elite series for Apple and Apple type computers, and drives for the IBM PC have set a standard of quality end excellence which sets us fer apart from the rest of the field.

Our new 20,000 square foot facility in Chatsworth, California is equipped with the latest in automated equipment to assure the very finest in quality products for the the business professional, student, and hobbyist.

UNPACKING. (Treasure Hunt!)

Before leeving the factory, every **RANA** disk drive is carefully inspected to exacting standards to assure the high level of performance that thousands of satisfied users have come to expect from RANA Systems.

As you unpack you new **RANA 1000** you will find the following items:

* The **RANA 1000** Intelligent Disk Drive.
* An interconnect cable (with built in strain relief).
* Atari compatible power supply.
* Installation guide.
* Registration card.

Save the shipping container and all packing materials. They were carefully designed to reduce the possibility of transportation damage.

UNPACKING

As a routine part of our systematic quality control, your **RANA 1000** disk drive was carefully inspected and tested for flaws before it was packed. However, should you find any **PHYSICAL** flaws after unpacking your unit, immediately notify your dealer and request the name of the carrier. A written claim to cover the damages must be initiated by you directly with the carrier who delivered your **RANA 1000** to your dealer.

THE RIGHT TO ANY CLAIM AGAINST A PUBLIC CARRIER CAN BE FORFEITED IF THE CARRIER IS NOT NOTIFIED PROMPTLY OR IF THE SHIPPING CARTON AND PACKING MATERIALS ARE NOT AVAILABLE FOR INSPECTION BY THE CARRIER. SAVE ALL PACKING MATERIALS UNTIL THE CLAIM HAS BEEN SETTLED.

ASSEMBLY. (Put Tab C in Slot X!)

The installation of your **RANA 1000** disk drive is very straight forward. If this is your first disk drive and your only accessory, the following instructions will have you up and running in about three minutes. If you have a program recorder, ATARI printer, 850 interface or other disk drives, read carefully through the next chapter, **ADDRESSES AND ZIP CODES**. It will help you to set up your system in the shortest period of time.

STEP 1

Make sure the power switch is turned off on both the computer and the disk drive. Connect the power supply to the drive and plug it into the wall.

STEP 2

Examine the rear of your disk drive. You will notice that there are two openings marked I/O, input/output ports (see Fig 1). The top of the cable supplied is smaller than the bottom and must be inserted into either one of these openings so that the small side of the connector is on top. Connect the other end into the opening marked PERIPHERAL on the side of your **ATARI 400/800** or on the rear of the **1200XL, 600XL, 800XL,** or other **ATARI computer**.

STEP 3

Look for the four little (dip) switches on the rear of the drive (see fig 2) and make sure that all are in the down (off) position (single drive only, for multiple drives or a different default density see the chart in Chapter 5). If any switches are in the up (on) position, your drive will not function properly. Take a ball point pen, and insert it on top of the switch which must be turned off and gently slide it towards the bottom of the drive. This assigns your drive address number one (drive 1) or the **BOOT** drive. This drive will always give the initial operating system instructions to your computer when you load (insert) a new program disk into the **RANA 1000**. This drive will be where the computer looks for a program when it is first turned on or reset. This drive must be used to load your programs.

STEP 4

Turn on your drive using the switch on the rear, (the drive must be turned on first) so that your computer will notice that something new has been added when it is turned on. When power is first applied to your **RANA 1000**, the power and busy lights will turn red, you should wait for the busy light to go out before inserting a diskette. Insert a diskette with PROGRAM information on it such as a game, DOS or business program. Caution, if you insert a blank unformatted diskette into the drive without first loading a program, the drive will not function properly.

STEP 5

Turn on your ATARI computer and witness the first of many hours of enjoyment as your new **RANA 1000** disk drive brings you a new world of efficiency!

For more information on the care and feeding of disks to your new drive, see chapter 8, DISKETTES.

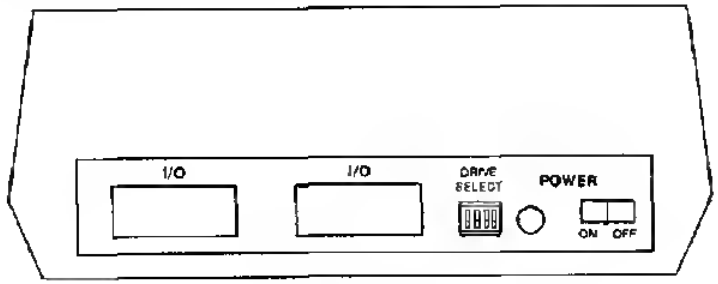


Figure 1

Figure 2

DRIVE ADDRESS. (Zip Codes too!)

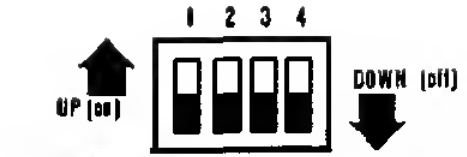
Very much like a city which has addresees, multiple accessories or add ons (disk drives in particular) must be assigned an address. Otherwise the computer would never know where it is going to go to get the information you are looking for! We assign an address by using two switches on the back of each disk drive we add to the system; we can have up to four.

Look at figure 3. You will see that the switches correspond to the same switches on the back of your **RANA 1000** disk drive. If you have an **ATARI** or other brand of drive in addition to your **RANA** look up the location and use of the switches for that unit in its instruction manual. The location may be different and the switches themselves might look different but the principle is the same for all drives. Let's assume for the sake of discussion that you are the proud new owner of two **RANA** disk drives and you want to assign an eddrees of 1 to your first drive and 2 to the second drive.

You will notice that the switches in figure 3a ere for a unit address of 1, all the switches, (as in the case of a single drive) are in the off position. This tells the computer that from now on this is going to be drive number one (the main drive in your system). Now look at figure 3b. The switch number one is in the up or on position. This would indicate that this drive has been assigned the address drive number two. Figures 3c and 3d show the positions for additionel drives with the addreeses 3 and 4. Two drives cannot heve the same address. Remember that this rule must apply even if you just happen to have a drive from another manufacturer.

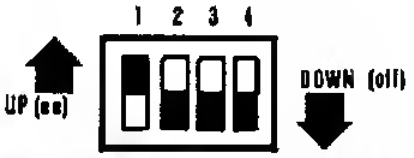
If you are connecting more than one drive to your computer or accessories such as the interface module, it is necessary to daisy chain all of your accessories.

Look et Figure 1 on page six and the beck of your **RANA 1000**. Those two openings merked I/O play an important roll in thet funny term called daisy chain. Like the petals on a daisy which form a complete circle, (well, almost!), each device (such as another **RANA 1000**) must be connected so that the information from your computer is passed from one to the other. Drive number one is connected directly to your computer, drive number two is connected to drive number one using that second I/O opening! Each device you add to your computer is connected in this manner so that everything in the chain communicetes the same way.



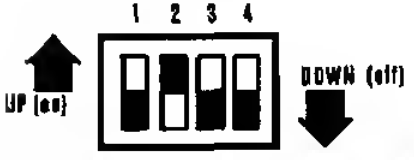
UNIT ADDRESS 1: S1 (off); S2 (off); S3 (off); S4 (off)

Figure 3a



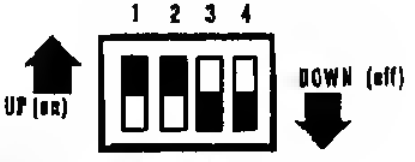
UNIT ADDRESS 2: S1 (on); S2 (off); S3 (off); S4 (off)

Figure 3b



UNIT ADDRESS 3: S1 (off); S2 (on); S3 (off); S4 (off)

Figure 3c



UNIT ADDRESS 4: S1 (on); S2 (on); S3 (off); S4 (off)

Figure 3d

SUMMARY OF REAR PANEL SWITCH FUNCTIONS

SWITCHES*	(1)	(2)	(3)	(4)	NOTES
DRIVE 1	OFF	OFF	#	#	
DRIVE 2	ON	OFF	#	#	
DRIVE 3	OFF	ON	#	#	
DRIVE 4	ON	ON	OFF	OFF	
LO	(ANY)	(ANY)	OFF	OFF	128 X 18 (90K BYTES)
H1	(ANY)	(ANY)	ON	OFF	128 X 26 (130K BYTES)
H2	(ANY)	(ANY)	OFF	ON	256 X 18 (180K BYTES)
DIAGNOSTICS	(**)	(**)	ON	ON	

Switches 3 and 4 may be set to any of the density settings. If 3 and 4 are set to diagnostic (both on), then drive selection has no meaning.

* The off position for all switches is down.

**Switches 1 and 2 are ignored in the diagnostic mode.

CONTROLS. (Things to Push and Watch!)

Your **RANA 1000** has features which are not found on any other drive at any price. Study the descriptions of the LED indicators and touch pads so that you can take advantage of your **RANA 1000's** unique capabilities (see fig 4).

*** LED 2 DIGIT DISPLAY**

This display is capable of showing you a wide variety of information at the push of a button.

*** POWER INDICATOR**

This tells you that the unit has been turned on and power is applied.

*** BUSY INDICATOR**

When this light is on your Rana is performing a function. Never open the door, or do anything with your computer until this light goes out. (The only exception would be when you wish to abort a function such as the accidental formatting of an important disk.)

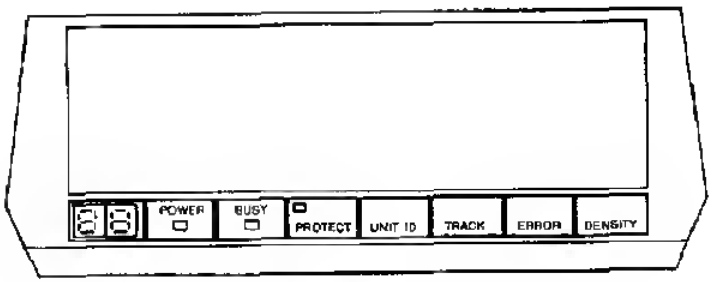


Figure 4

WRITE PROTECT SWITCH AND INDICATOR

The Red digital LED (light emitting diode) in the upper left hand corner of this switch, when lit, informs you that either you have a write protect tab on the diskette inside the drive, or the write protect pad has been activated. This protects your program disk from accidental erasure. When this lamp is lit, you cannot write to the disk accidentaliy or format unintentionally.

*** UNIT ID (IDENTIFICATION) SWITCH**

As long as this pad is depressed the unit number is displayed. It is an excellent check of address of your drive when it is first being set up. If you have multiple drives each drive can be polled to verify that it has been given the proper address. When moving your system from place to place it can save you from having to look behind the drive to determine which drive goes where!

*** TRACK SWITCH**

Push this pad once for continuous display of the track the **RANA 1000** is reading. Push any other pad to change the display to that function temporarily. The track display is the only function which will display continuously. When your **RANA 1000** is first turned on, the track number will be displayed continuously unless you command it off by touching the track pad.

*** ERROR SWITCH**

Push this pad to see a momentary display of error codes in the unlikely event that there is an error. This pad gives a two character digital LED display. If no error has occured, then a code 00, 40, or 80 will appear. Any other number or character indicates an error exists. Check the tables in chapter 7 to determine the meaning of these codes.

*** DENSITY SWITCH**

This pad will show a momentary display of the current density the drive is operating in. The codes and their densities are:

LO - Low Density - 128 bytes X 18 sectors 90K bytes of storage

Hi - High Density - 128 bytes X 26 sectors 130 K bytes of storage

H2 - Double Density - 256 bytes X 18 sectors 180K bytes of storage

DENSITY MAY BE SELECTED IN ONE OF FOUR WAYS.

1. Simply load in a program diskette and the **RANA 1000** will read the density and automatically set the drive to that density.
2. Change density through the **R=RECONFIGURATION** function of **SMARTDOS**.
3. Set switches 3 and 4 on the rear of the **RANA 1000** to the density you want to operate in.
4. Select density on the front panel in the diagnostic mode according to the chart in chapter 9.

***FORMATTING**

When you wish to format a diskette under DOS or program control the digital LED's will indicate that this function is being carried out by showing an upper case "F".

There are additional display functions which are unique to your **RANA 1000**. These will be covered in detail in chapter 9.

ERROR CODES. (OOPS!)

In the last chapter we saw how the **RANA 1000** was able to report useful information to you while you are running programs. We will now show you how for the first time, you will no longer be in the dark if you suspect a malfunction in your disk drive. The following codes will appear in the status window during normal and abnormal operation of the **RANA 1000**. For example: a code 00 indicates that the drive is functioning normally. You should keep this manual close to your system so that if a code appears other than 00, you will be able to look it up quickly and take corrective action.

These codes are used as part of the diagnostic function of the **RANA 1000** and are different than the I/O codes you will see on your computer from time to time. For a listing of the I/O codes and an explanation of what they mean, refer to your DOS manual.

CODE 00 This is a normal condition.

ACTION: No action necessary.

CODE 01 No Diskette or it is not properly formatted or the drive door is opened.

ACTION: Insert a proper diskette or close the drive door.

CODE 04 There has been a hardware malfunction in the disk drive.

ACTION: Refer to chapter 10 of this guide. Your drive requires service.

CODE 08 Indicates a CRC error. (This is one of the automatic data tests built into the information stored on the diskette). It indicates that some of the information stored on the diskette is lost or incorrect.

ACTION: You should rewrite the file to the disk. If you have repeated 08 errors, transfer all files possible to another diskette.

Reformat the diskette, and if errors still occur, discard the diskette since it is no longer reliable.

CODE 0C This indicates there was both a hardware problem and a CRC error (one of the automatic data tests built into the information stored on the diskette) which indicates that some of the information was lost or is incorrect.

ACTION: Please read chapter 10 of this guide. Your drive requires servicing. Once serviced, you should reread the file. If you have repeated Code 0C errors, transfer all files possible to another diskette. Reformat the diskette. If errors still occur, discard the diskette since it is no longer reliable.

CODE 10 This is a diskette header error, it indicates that part of the basic information on the diskette, used by the computer to find where to store and retrieve data, has been damaged.

ACTION: The format of the diskette has been damaged. You must transfer all of the files that you can to another diskette. Then, attempt to reformat the diskette. If the same error or an 08 error is indicated, you should discard the diskette.

CODE 14 This code indicates there was a hardware and a diskette header error. This indicates that part of the basic information on the diskette used the computer to find where to store and retrieve data (the address header) has been damaged.

ACTION: Please read chapter 10 of this guide. Your drive requires servicing. Once serviced, check the diskette again. If the 10 error occurs, transfer all files possible and try to format the diskette. If either an 08 or 10 occurs, discard the diskette.

CODE 18 This code indicates that both a CRC error (one of the automatic data tests built into the information stored on the diskette) meaning that some of the information stored on the diskette is lost or incorrect **AND** a diskette header error which indicates that part of the basic information on the diskette used by the computer to find where to store and retrieve data (the address header), has been damaged.

ACTION: You must transfer all the files you can to another diskette, then reformat the diskette. If you still have an 08, 10 or 18 error, then discard the diskette.

CODE 1C This indicates that a hardware error has occurred and at the same time a CRC error (one of the automatic data tests built into the information stored on the diskette) which indicates that some of the information stored on the diskette is lost or incorrect **AND** a diskette header error has also occurred. This indicates that part of the basic information on the diskette used by the computer to find where to store and retrieve data (the address header) has been damaged.

ACTION: Please read chapter 10 of this guide. Once the unit has been serviced, try using the diskette again. If an 08 occure, try to read the information. If a 10 or an 18 error occurs, transfer all files to another diskette and reformat the diskette again. If an error still occurs, discard the diskette.

CODE 40 This code means that you are reading a write protected diskette.

ACTION: No action needed. This is a normal condition.

CODE 41 This indicates that although a diskette is inserted, that either the door is not closed or the diskette is not properly formatted.

ACTION: Either close the door or insert the proper disk in the RANA 1000.

Code 4C The diskette is write protected, and there has been a hardware malfunction. This indicates that some of the information is lost or is incorrect.

ACTION: Please read chapter 10 of this guide. Your drive requires servicing. Once serviced, retry the diskette. If a 48 occurs, try to rewrite the data. If this fails (another 48 error), transfer all the files possible and reformat the diskette. If this diskette still causes any errors, discard it since it is no longer reliable.

CODE 44 The drive has a hardware problem while using a write protected diskette.

ACTION: Please read chapter 10 of this guide, your drive needs servicing.

CODE 46 While using s write protected diskette, a CRC error (one of the automatic data teets built into the information etored on the diskette) has occurred. This indicates that some of the information stored on the diskette is lost or incorrect.

ACTION: You should rewrite the informstion to the diskette. If this is impossible, transfer all files possible to another diskette and diacard the diskette.

CODE 80 This is a normal code which is only reported during a write operetion.

ACTION: None, as noted above, a normal report.

CODE 81 The computsr was in the process of writing information to the diskette and either the door was open or the diskette was not properly initialized.

ACTION: Close the door or ineert a properly formatted diskette in the drive.

CODE 84 While the computer was trying to write information to the diskette, the drive malfunctioned.

ACTION: Please read chapter 10 of this guide. Your drive requires servicing.

CODE 90 Diskette header error. This indicates that during a write operation part of the basic informstion on the diskette used by the computer to find where to store and retrieve dsta (the address header) has been damaged.

ACTION: Transfer all the files you can from the diskette and reformat the diekette. If the diekette still has sn error, discard it.

CODE 94 While the computer was trying to write information to the diskette, there was both a hardware malfunction AND a diskette hesder error, which indicates thst part of the basic information

on the diskette used by the computer to find where to store and retrieve data (the address header) has been damaged.

ACTION: Please resd chspter 10 of your guide. Your drive requires servicing. Once serviced, test the diskette. If a 90 error still occurs, transfer all files possible and discard the diskette.

CODE 98 While trying to write information to the disketts, both a diskette header error, which indicates that part of the basic information on the diskette used by the computer to find where to store and retrieve data (the address header) hss been dsmaged snd a CRC error (one of the automstic data tests built into the information stored on the disketts) which indicates that some of the information stored on the diekette is lost or incorrect, has occurred.

ACTION: Transfer all files poeeible to another diskette. Try to reformat the diskette. If errors still occur, discard it.

CODE 9C While the computer was trying to write to the diskette, a hardware malfunction occurred, and there was also a CRC error as well as a diskette header error. Some information was lost or is incorrect.

ACTION: Please read chapter 10 of this guide. Your drive requires servicing. This information will provide you with prompt service. You should try the diskette again. If there is a 90 or 98 error, rewrite the file to diskette. If you have repeated 90 or 98 errors, transfer all files possible and discard the diskette since it is no longer reliable.

CODE C0 The computer was trying to write to a write protected disk.

ACTION: Remove the write protect tab or turn off the write protect switch.

DISKETTES. (Music, Records!)

Diskettes are made of magnetic material similar in content to hi fi tapes used in recorders. They are permanently sealed in a square mylar case. NOTE: Under no circumstances should you take the diskette out of its sealed case.

Diskettes can be easily damaged by surface dust, fingerprints, and just about anything else that might adhere to the surface. For that reason always hold the diskette by the mylar case and return it to the protective jacket when you have finished with it.

Your **RANA 1000** reads and writes information to and from a diskette as it spins in your drive. The operation is similar to a record spinning on a turntable. The diskette is read through the long oval opening below the center hole.

A square write protect notch on the right hand side of the disk allows the **RANA 1000** to record information on the diskette. This notch can be covered with a write protect tab (supplied with all blank diskettes) thus keeping your valuable information safe from accidental erasure.

You should also get into the habit of saving to disk your programs or text every few lines just in case there is a power failure or something goes wrong with one of the components of your system. You should also back up (that is make a copy of your valuable information on a duplicate disk just in case something does happen to your working copy.

A backup diskette of your working copy can be made by using the backup function found in your application program or by using the copy function found in SMARTDOS. A copy of this Disk Operating System may be purchased from your dealer.

REMEMBER WHEN WORKING WITH FLOPPY DISKS:

1. KEEP YOUR FINGERS OFF THE EXPOSED SURFACES OF THE DISK (in the center and oval sections on both sides of the diskette.)

2. AVOID PLACING DISKETTES ON TOP OF OR NEAR YOUR COMPUTER MONITOR, STEREO SPEAKERS OR ANYTHING THAT MIGHT BE MAGNETIC EVEN POWER LINES.

3. PROTECT YOUR DISKS BY RETURNING THEM TO THEIR PROTECTIVE SLEEVES AS SOON AS YOU ARE THROUGH WITH THEM.

4. STORE YOUR DISKETTES UPRIGHT, AWAY FROM HEAT, TELEPHONES, ANYTHING METAL.

5. IF YOU MUST WRITE ON THE DISKETTE LABEL, USE A FELT TIP PEN ONLY.

6. BACK UP (whenever possible) YOUR PROGRAM MATERIAL. YOU NEVER KNOW WHEN A DISKETTE MAY GO BAD.(Oh yes, it **CAN** happen to you!)

DIAGNOSTICS (Tool box and other good things)!

The tool box for the **RANA 1000** may be opened by moving the (dip) switches 3 and 4 to the up position. When this is done the LED indicators on the front console indicate d, showing you that the diagnostic functions have been accessed.

There are ten functions which may be performed while in the Diagnostic mode. These functions are accessed by pushing the **UNIT ID** pad. Each time the pad is pushed, the function changes. For example, the first time the pad is touched, **F0** appears on the LED Display. The second time F1 appears. These codes will continue to appear in sequence each time the pad is pressed or until a specific function is chosen and executed.

***F0.....Format Disk L0 Density (ATARI 810 - 128 X 18)**

***F1.....Format Disk H1 Density (ATARI 1050 - 128 X 26)**

***F2.....Format Disk H2 Density (Double Density - 256 X 18)**

C0.....Select L0 Density for diagnosis

C1.....Select H1 Density for Diagnosis

C2.....Select H2 Density for Diagnosis

d1.....Diagnostic Sequential Read

d2.....Diagnostic Random Read

***d3.....Diagnostic Sequential Write/Read/Verify**

***d4.....Diagnostic Random Write/Read/Verify**

CAUTION

*** The diagnostics and format modes marked with an asterisk will destroy all information on the diskette in your RANA 1000. Use only a diskette which does not have important files for these functions.**

FORMATTING...Functions F0-F1-F2

In order to Format a diskette in the Diagnostic mode: Choose the density you want your diskette formatted in.

EXAMPLE: If you want (H2), 256 X 18 (180K), press the **UNIT ID** pad until **F2** appears on the indicator panel. Insert your blank diskette and make sure it does not have a write protect tab covering the write protect notch. If the write protect light is on, push the pad to turn it off, then push the **TRACK** pad. You will see a single **F** displayed on the Digital LED readout. This indicates that the disk is being formatted. When the formatting is finished the d symbol will appear on the Digital LED readout.

If an error occurs during formatting, an **Fb** will be displayed by the Digital LED readout indicating that the format was bad and should be tried again. The system is locked up as a result of the defective operation and can only be cleared to the Diagnostics menu by depressing the **ERROR** pad.

It is also possible to abort the format operation by depressing the **ERROR** pad if it appears that the drive is encountering a sector which in your opinion will not allow a successful format of the diskette.

When any of the four diagnostic functions are being used, information about the status of the operation is available by touching the proper function pad. The current track can be displayed by touching the **TRACK** pad. The total number of errors can also be displayed (in Hex notation and will freeze at FF, 256).

DIAGNOSTICS ... Functions d1-d2-d3-d4

Occasionally you may discover a problem with a diskette which does not seem to read or accept data properly. If this involves valuable data files, or if you suspect a problem with a disk drive, the problem can be isolated by using the built in diagnostic functions.

In order to perform the diagnostic functions, the **RANA 1000** must be set manually to the proper density. Determine if the drive is set to the proper density for your test by pushing the **density**

pad. If the drive is properly set, you may select the proper test by pushing the **UNIT ID** pad. If the density is not correct then you must select either **C0, C1 OR C2** and then push **TRACK** to set the new density.

EXAMPLE: When you enter the diagnostics mode the drive is set (default) at **LO** density. The particuler disk in question is a double density disk which has been giving you trouble on another drive. Step through the functions until **C2** is indicated on the front panel. Set this density by pushing **TRACK**. This resets the drive to **H2** (double density). You may verify this by pushing the **DENSITY** pad. The drive is now properly set for **DIAGNOSTICS.**

There are four DIAGNOSTIC functions:

SEQUENTIAL READ - d1

This test will read and verify each sector on the diskette. It reads sectors and tracks in order. This provides a speedy process of disk verification. It is terminated by pushing the **UNIT ID** pad.

RANDOM READ - d2

The drive will, by itself, randomly read each sector on each track. If there is a defectivs sector, it will stop and display the trsck, the sector and the type of error.

SEQUENTIAL WRITE/READ/VERIFY - d3

The drive will, by iteelf, write, read, then verify each sector on the diskette in sequence. If there is an error it will indicats the track, the sector and the type of error. The total number of errors will also be displayed if the **ERROR** pad is pushed. This diagnostic must be terminated by pushing the **UNIT ID** pad.

RANDOM WRITE/READ/VERIFY - d4

The drive will, by itself, randomly write then rsad and verify each sector on the disk. If there is an error, it will indicate the track, the sector and the type of error. Ths total number of errors will also be displeyed if the **ERROR** pad is pushed prior to terminating the test.

When you are satisfied with the results of this test, push the **UNIT ID** pad to return the drive to the diagnostice standby mode.

FACTORY SERVICE (Calling Dr. RANA)!

Great care has been taken by the staff of **RANA** to assure that your **RANA 1000** drive is as flawless in appearance as it is mechanically end electronically sound.

RANA has a Technical Service Department to answer all questions pertinent to the installation and operation of your **RANA 1000.** Please feel free to write us at any time and we shall offer prompt advice. Plsase be sure to identify your unit as a **RANA 1000** and include the serial number. If it is possible, please include your phone number. We would prefer to contact you in person!

If your problem cannot be resolved through our combined efforts, we may wish to refer you to a local authorized repair agency, or we may prefer to authorize the return of your **RANA 1000** to the factory. If we do authorize the return, we will issue you a "MRA" (Material Return Authorization) number. This number should be placed on the outside of all packagee sent to us.

ADDRESS YOUR INQUIRY TO: OR CALL OUR TOLL FREE NUMBER:

Service Depsrtment
RANA SYSTEMS
21300 Superior Street
Chatsworth, California 91311

Within California: (800) 262-1221

Outside California: (800) 421-2207

UNDER NO CIRCUMSTANCES SHOULD YOUR RANA 1000 BE SHIPPED TO THE FACTORY WITHOUT PRIOR AUTHORIZATION.

Always ship via recognized freight carriers. Do not ship parcel post.

ALL PARCEL POST SHIPMENTS WILL BE RETURNED.

CHECK POINTS

IF THERE IS A PROBLEM WITH THE DISK DRIVE, PLEASE CHECK THE FOLLOWING:

1. Have you interconnected the disk drive and the computer? Check for solid connections between the ATARI and the disk drive I/O?

2. Have you connected the power supply unit to the **RANA 1000** ? The low voltage side plugs into the back of the **RANA 1000**. Has the drive been turned on?

3. Have you set the appropriate unit address number(s)? Remember, each drive must have a different unit number, and, one drive must be designated as unit number 1 (The system drive).

4. Is there a disk in the drive with the door closed?

OWNER CARE. (Care and Feeding!)

Your **RANA 1000** disk drive, unlike the ATARI computer, is a mechanical device and, therefore, should have an occasional "check-up". Since read/write head alignment and other precision settings can **DRIFT** over an extended period of time (varying with usage), data reliability can also drift unless the adjustments are checked. This problem once it occurs, will be greatly amplified in a **DOUBLE DENSITY** drive.

In addition to mechanical adjustments the read/write head can become dirty from a year's worth of diskettes gilding past its surface. The common user remedy for this dirt buildup is to use one of the many head cleaning diskettes available on the market today. However, these diskettes can be very abrasive to the delicate read/write head.

If there are indications that you are losing data and the diagnostics indicate that this is happening, **RANA** Systems recommends that you use only the **PERFECT DATA SYSTEMS** 5 1/4 head cleaning diskette. We have found that this product is non abrasive to the heads of you drive if the instructions which come with the **PERFECT DATA** cleaning system are followed.

Regardless of what cleaning diskette is used, there is absolutely no reason for any disk drive's read/write heads to require constant cleaning. Occasional cleaning (once a month at the most) should take care of any dirt problems. One of the worst things you can do to your disk drive aside from using it as a football, is overcleaning the read/write heads. Take our word for it, they just don't need it!

All disk drives, regardless of make, are delicate precision machines which must be handled gently if they are to live full and useful lives. Avoid bouncing or any kind of rough handling. In general, they should be kept as far away from television monitors and screens as possible. Your **RANA 1000 disk drive** is equipped with a metal case which minimizes the strong radiation from monitors, but the magnetic media (diskettes) can be destroyed over a short period of time by coming within the range of this radiation. It may not be noticed at first, a bit lost here and there, but eventually the disk and your valuable data could be lost.

If the outward appearance becomes soiled or finger printed, **RANA** drives can be cleaned with a soft cloth dampened in a solution of LIQUID DETERGENT and water. Spray liquid onto the cloth, not directly onto the drive. Under no circumstances should a LYE SOLUTION or AN ABRASIVE CLEANER such as SCOURING POWDER be used on any part of the RANA drive. Be sure that your hands and the **RANA 1000** are completely dry before connecting power to the drive.

SPECIFICATIONS. (Tech Stuff!)

DRIVE MECHANISM

The drive motor operates on 12VDC and rotates the spindle at 288 RPM through a belt-drive system. The motor speed is controlled by a feed-back from a tachometer inside the motor. A registration hub clamp that moves in conjunction with the door closure mechanism centers and clamps the diskette onto the spindle hub.

HEAD POSITIONING MECHANISM

An electrical stepping motor and an advanced head positioning mechanism positions the read/write head. Clockwise and counter-clockwise rotations of the stepper motor are translated into linear head movement via stainless steel Band Pully Positioning.

In the **RANA 1000** the stepper motor acts on a pully to which is attached a flexible, ultra thin stainless steel metal band. One half of this band has a slot through which the other half passes after looping around the pully.

The two bands are secured to the main head carriage at the inner and outer edges. Slackness in the band or the motion of the mechanism is highly unlikely as the system is pre-tensioned (reducing angular and linear inertia) to allow greatly improved track to track access times.

READ/WRITE HEAD

The **RANA 1000** read/write head is a single element, glass bonded ferrite/ceramic head with tunnel erase elements to provide erased areas between data tracks. Thus, normal interchange tolerances between media and drives will not degrade the signal to noise ratio and insures diskette interchangeability.

The head is mounted on a carriage assembly which moves on rails and is positioned by the highly accurate stainless steel Band Positioning described above.

The diskette is loaded against the head when the drive door is closed. The read/write head is in direct contact with the diskette, so the head surface has been designed to obtain maximum signal transfer to and from the magnetic surface of the diskette with minimum friction and wear on the recorded surface.

The single head is positioned below the diskette facing the surface opposite the label. A felt pressure pad is mounted on an arm directly opposite the read/write head. This pad insures constant contact of the diskette against the head. Although this pad is designed for a minimum of diskette wear, it is **NOT** designed to ride on a diskette surface containing valid data. It is therefore not recommended that diskettes be written on both sides.

SPECIFICATIONS

CAPACITY:
L0:90K bytes (Formatted)
H1:130K bytes(Formatted)
H2:180K bytes(Formatted)

NOTE:1 Kbyte = 1024 bytes

TRACK TO TRACK ACCESS TIME
L0:12/12 Msec
H1:12/36 Msec
H2:12/36 Msec
NOTE: above:(min/max times.)Stepping :
L0 Bidirectional
H1,H2 Unidirectional.

MAXIMUM ACCESS TIME
L0:480 Msec
H1:502 Msec
H2:502 Msec
AVERAGE ACCESS TIME
L0:240 Msec
H1:251 Msec
H2:251 Msec
NUMBER OF TRACKS:
40
NUMBER OF SECTORS PER TRACK:
L0:18 X 128 bytes per sector
H1:26 X 128 " " "
H2:18 X 256 " " "

TRACK DENSITY
48 TPI all density ± 1.5%

ROTATIONAL SPEED
288 RPM ± 1.5%

SOFT ERROR RATE
1 in 10^9

HARD ERROR RATE
1 in 10^{12}

SEEK ERROR RATE
1 in 10^6

MOTOR START TIME
400 Msec

MOTOR TIME OUT
8 sec

UNIT WEIGHT:
3 LBS 14 OZ

SHIPPING WEIGHT
7 LBS

POWER REQUIREMENTS
9.0 Volts AC @ 2.5 A

OPERATING TEMP.

60F to 110F

STORAGE TEMPERATURE
-65F to 250F

Specifications are approximations based on industry standard testing. They are not necessarily based on a **RANA 1000** operating under the ATARI operating system and hardware, and are also not best/worst case.

Scott Goulding